

<p>(51) International Patent Classification ⁵ : H04N 7/173, G11E 27/02, 27/10 G11B 27/36</p>	<p>A1</p>	<p>(11) International Publication Number: WO 90/15507</p> <p>(43) International Publication Date: 13 December 1990 (13.12.90)</p>
<p>(21) International Application Number: PCT/AU90/00226</p> <p>(22) International Filing Date: 30 May 1990 (30.05.90)</p> <p>(30) Priority data: PJ 4500 1 June 1989 (01.06.89) AU</p> <p>(71) Applicant (for all designated States except US): RIGHT HEMISPHERE PTY. LTD. [AU/AU]; 28 Adeline Street, Faulconbridge, NSW 2776 (AU).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only) : VOGEL, Peter, Samuel [AU/AU]; 28 Adeline Street, Faulconbridge, NSW 2776 (AU).</p>		<p>(81) Designated States: AT (European patent), AU, BE (Euro- pean patent), CH (European patent), DE (European pa- tent)*, DK (European patent), ES (European patent), FR (European patent), GB (European patent), IT (Euro- pean patent), JP, LU (European patent), NL (European patent), SE (European patent), US.</p> <p>Published <i>With international search report.</i></p>

(57) Abstract

```

graph TD
    RFInput101[RF Input 101] --> Receiver102[Receiver 102]
    Receiver102 --> Demodulator103[Demodulator 103]
    Demodulator103 --> Microprocessor104[Microprocessor 104]
    Microprocessor104 --> IRTransmitter105[IR Transmitter 105]
    IRReceiver113[IR Receiver 113] --> Microprocessor104
    Microprocessor104 <--> RAM106[RAM 106]
    Microprocessor104 <--> ROM107[ROM 107]
    Microprocessor104 <--> TRAM108[TRAM 108]
    TRAM108 --> TextGenerator109[Text Generator 109]
    TextGenerator109 --> RFModulator110[RF Modulator 110]
    RFModulator110 --> RFOutput111[RF Output 111]
    IRRemote112[IR Remote 112]
  
```

TELEVISION PROGRAM SELECTION

5

TECHNICAL FIELD

The present invention relates to means for and methods of controlling video appliances, such as video cassette recorders or television receivers, so that selected television programs are viewed or recorded.

BACKGROUND ART

With the increasing use of video cassette recorders (VCRs) in the home, VCRs are being increasingly used for recording broadcast programs for later replay and viewing. Many VCRs are equipped with timing means for starting and stopping recording of programs at times selected by the user. To take advantage of this ability, the user must consult a television schedule, select the programs to be recorded, and enter into the VCR's memory the start time and end time or duration of the selected programs, and channel to be recorded. In some cases this process can be complicated and error-prone. There is a great need for convenient ways of selecting programs to be recorded.

In an attempt to address this problem, some manufacturers have equipped VCRs with bar-code reading wands. Users can pass the wand over a bar-code printed on the television schedule which identifies the channel and time of the selected program. This information is used to set the timing means of the VCR. Another variation on this concept involves use of a sheet of times, dates and channels bearing the associated bar codes. In this case, the user must scan the appropriate bar code on this sheet for time, date and channel corresponding to programs selected for recording.

While these prior-art schemes have somewhat alleviated the difficulties, programming VCRs for recording is still error prone and inconvenient. Attempts have been made to provide improved programming by providing a device which accepts a machine-readable version of the television schedule via the medium of

information, identifying a number of programs displayed in said schedule as programs to be recorded, receiving a second signal identifying for each television channel the program being currently broadcast, decoding said second signal, and enabling viewing of the
5 selected programs according to the programs selected from the schedule as those to be viewed and the content of said decoded second signal.

According to another useful extension of this inventive concept, there is provided a television program recording identifying method
10 comprising the steps of receiving a first signal representative of the name of a television program being broadcast, receiving a second signal being a television broadcast, and recording said first signal while simultaneously recording said second signal.

In another aspect, the invention consists in a television program
15 recording selector including a receiver adapted to receive a first signal conveying data representative of a television programming schedule, means to decode said received signals, means for displaying the resulting decoded schedule information, means for selecting a number of programs displayed in said schedule as
20 programs to be recorded, means for receiving a second signal identifying for each television channel the program being currently broadcast, means for decoding said second signal, and means for controlling recording of the selected programs according to the programs identified as those to be recorded and the content of said
25 decoded second signal.

In another aspect, the invention consists in a television program
viewing selector including a receiver adapted to receive a first signal conveying data representative of a television programming
30 schedule, means to decode said received signal, means for displaying the resulting decoded schedule information, means for selecting a number of programs displayed in said schedule as programs to be viewed, means for receiving a second signal identifying for each television channel the program being currently broadcast, means for
decoding said second signal, and means for controlling viewing of
35 the identified programs according to the programs selected as those to be viewed and the content of said decoded second signal.

According to another useful extension of this inventive concept, there is provided a television program recorder comprising means

demodulator 103 which provides as an output digital data which is fed to an input of microprocessor 104.

Microprocessor 104 executes program instructions stored in read-only-memory ROM 107, and is responsible for all control and user-interface functions of this embodiment of the invention.

Received data comprises two main types: periodic data and real-time data. Periodic data comprises the television schedule for the current day and future days, including the name of each program, its scheduled start time, the channel on which it is to be broadcast, and a classification (such as whether or not it is suitable for viewing by children). The periodic data is transmitted from a remote source, such as the television broadcast station or a separate transmitting station, at infrequent intervals, say once every hour. Real-time data comprises information which identifies which program is currently being broadcast on each channel, including the program classification. This data is transmitted from the remote source as soon as possible after a change of program on any channel, and is then repeated occasionally, say every 10 seconds, until another change of program occurs.

On receipt of program schedule data, microprocessor 104 stores the data in random access memory RAM 106.

On receipt of a command from the user requesting information, such as the program schedule, microprocessor 104 retrieves the relevant data from RAM 106, formats it for display and stores it in text random access memory TRAM 108.

Text generator 109 accesses the data stored in TRAM 108 and generates a video raster signal which when conveyed to a television receiver via RF modulator 110 and RF output 111 causes the text to be displayed on the television receiver screen.

IR receiver 113 receives infra-red control signals from IR remote 112, which for convenience is a hand-held control device. IR remote 112 includes a switch array which provides means for users to issue instructions to microprocessor 104, and in this embodiment is constructed as shown in Fig.2, so as to offer most conveniently the functions described below.

IR transmitter 105 is an infra-red emitting diode which is used to control a VCR, via the infra-red remote control channel commonly used with VCRs. IR transmitter 105 is pulsed under control of

invention can be used to turn on the television receiver when a preselected broadcast starts, and to sound an alarm five minutes beforehand. To enable or prohibit a particular classification, the user pushes the C button, which causes the STATUS display to
5 appear with the cursor positioned on one of the indicator boxes. The desired classification is then selected by moving the cursor up or down using the up or down pointing triangular keys. The enable status of the cursored classification can be changed by pressing the "sel" button.

10 Another box in the ENABLE column labelled "LOCK" enables a security function which prevents changing the status of classifications unless a personal identity number, known only to authorised persons, is entered first.

PROGRAM. Pressing this button causes a display such as that of
15 Fig. 3 to be displayed. This display is known as the PROGRAM menu, and shows a list of scheduled programs for each available channel. Channel indicator box 301 shows the date and channel to which each column of schedule information relates. Each entry in the schedule shows the scheduled time of broadcast, title and censorship
20 classification. A cursor is used to highlight one schedule item at a time. The cursor can be moved up, down, right or left using the triangular switches. By way of example, in Fig. 3 item 302 is shown as cursored. A program can be selected for recording by pressing the "sel" switch when the desired item is cursored. An asterisk is
25 displayed next to each item selected for recording, as shown in the example of item 303 in Fig. 3. As it will generally not be possible to fit all the schedule information on the display, this embodiment of the invention is arranged so that the program menu scrolls in both axes. This scrolling occurs if the cursor movement switches are
30 pressed and the cursor is at the limit of movement in the corresponding direction. As seen in Fig. 3, arrows appear on the display indicating that further information can be accessed by scrolling the display further in the direction of the arrow.

STATUS. Pressing this button causes the status menu to be
35 shown. The column of this display under the heading "CURRENT" shows details of the program currently being broadcast on the channel selected for viewing. The information displayed includes the scheduled time of broadcast, date, channel, title and

identifying signal is received by receiver 102. This signal includes data identifying the channel concerned, the classification of the program, the name of the program, and such other identifying information as may be desired. When an identifying signal is
5 recognised by microprocessor 104, it takes different action depending on the current status of the VCR (ascertained by reference to the status table in memory) and the instructions previously issued by the user. The VCR status must be taken into account because different commands must be generated depending
10 on what the VCR is doing at that moment. For example, if advertisements have been prohibited (using the status display) and the received identifying signal indicates commencement of an advertisement, the microprocessor must ascertain whether the channel indicated by the identifying signal is the channel currently
15 selected by the VCR's tuner. Because any channel change commands previously issued to the VCR by the user have been forwarded to the VCR by the invention, the identity of the currently-selected channel is always available to the microprocessor. In this example, if the VCR is tuned to the channel on which a prohibited
20 advertisement is in progress, further reference is made to the status table to ascertain whether the VCR is recording. If it is, a suitable "pause" command is issued. When an identifying signal indicates that the program being recorded has resumed, the status is again checked before issuing a "resume recording" command, in case the
25 user has issued a command which has changed the status of the VCR in the meantime. Another example of action taken on receipt of a current program identification signal is comparison to a list of programs selected from the program guide display for recording. If the current program is identified as one selected for recording, the
30 VCR status is read and, depending on the current status, the commands required to start recording are issued. For example, if the VCR is currently tuned to a different channel, "channel up" or "channel down" commands are issued as required to select the channel to be recorded. Other commands, such as "power on" may
35 also be issued if required before the "record" command is issued.

The functions of this embodiment of the invention are implemented by suitable software stored in ROM 107 and executed by microprocessor 104. The program required to achieve this can

well as facilitating automatic location of a program by name. For convenience the invention can be further adapted to cause the name of a program to be printed legibly, for example on the casing of the video cassette on which the corresponding program is recorded.

- 5 This can be achieved in practise using a thermal or impact or other printing means controlled by the microprocessor or other controller of the invention, program identifying data received by the invention being caused to be printed as alpha-numeric characters on the outside of the video cassette, or onto another medium such as an
10 adhesive label which can be subsequently affixed to the enclosure of the recording or into a catalogue or elsewhere.

Whereas in the exemplary embodiment recording of selected programs is initiated and terminated according to correspondence between the name of a selected program and the name of the
15 currently-broadcast program being received, it is also possible to control recording according to the scheduled time of broadcast.

- It will also be understood by those skilled in the art that the display functions and other details of the invention described in relation to the embodiment above are given by way of example
20 only, and that changes to the features offered and particularly to the means of interaction with the user can be made without departing from the scope and spirit of the invention. For example, whereas the television display is used to display information for user inspection and switches are used for user control, the invention can
25 be practised using any other suitable display means and control means, such as a liquid crystal display or touch-activated screen. The screen formats shown in the drawings herein are given by way of example only and should also not be construed as limiting the scope of the invention. Furthermore, whereas the exemplary
30 embodiment provides a video-modulated RF output which is selected for viewing of menus, it is possible to arrange the invention so that the requested information is overlaid on the picture of the program being viewed.

- It is also envisaged that the method of transmission of data to
35 the invention from a remote station need not be by means of a radio transmission as used in the exemplary embodiment above. For example, the data could be conveyed to the invention by means of a signal embedded in the television broadcast, such as a special-
-

CLAIMS

- 5 1. A method of controlling a video appliance comprising the steps of:
receiving a first signal representative of a television program schedule;
receiving a second signal indicating which television program is currently being received;
10 converting said first signal into a display of text representative of a television program schedule;
selecting a subset of items of said displayed text;
causing said selected subset of displayed text to be marked on said display;
15 and, if said second signal indicates that a television program currently being received corresponds to one of said selected items;
causing a video apparatus to be activated.
- 20 2. A method of controlling a video appliance according to claim 1 wherein said first signal and said second signal are transmitted as part of a broadcast television signal.
- 25 3. A method of controlling a video appliance according to claim 1 wherein said first signal and said second signal are transmitted as a data signal independent of a broadcast television signal.
- 30 4. A method of controlling a video appliance according to claim 2 comprising the further steps of:
receiving a classification signal indicating the class of program being received;
selecting a set of classifications which are to be prohibited;
35 comparing said classification signal to said set of prohibited classifications, and, if said classification signal indicates that a received program is a member of the set of prohibited classifications;
-

9. A method of controlling a video appliance according to claim 3 comprising the further steps of:
combining said second signal with a television program signal;
5 recording said combined signal on a video recording medium;
replaying said recorded signal;
separating said second signal from said television program
signal; and
10 deriving, from said second signal, visible text descriptive of
the television program currently being replayed.
10. A method of controlling a video appliance according to claims 1-9 wherein said video appliance is a video recorder.
- 15 11. A method of controlling a video appliance according to claims 1-9 wherein said video appliance is a television receiver.
12. A video appliance controller comprising:
means for receiving a first signal representative of a
20 television program schedule;
means for receiving a second signal indicating which
television program is currently being received;
means for converting said first signal into a display of text
representative of a television program schedule;
25 means for selecting a subset of items of said displayed text;
means for causing said selected subset of displayed text to be
marked on said display; and,
means for causing a video apparatus to be activated if said
30 second signal indicates that a television program currently
being received corresponds to one of said selected items.
13. A video appliance controller according to claim 12 wherein
said first signal and said second signal are transmitted as part
of a broadcast television signal.
- 35 14. A video appliance controller according to claim 12 wherein
said first signal and said second signal are transmitted as a
data signal independent of a broadcast television signal.

18. A video appliance controller according to claim 14 and further comprising:
means for deriving, from said second signal, visible text descriptive of the television program currently being replayed.
19. A video recorder including a video appliance controller according to claims 12-18.
20. A television receiver including a video appliance controller according to claims 12-18.
21. A video recorder comprising an appliance controller according to claim 13 and further comprising:
means for combining said second signal with a television program signal;
means for recording said combined signal on a video recording medium;
means for replaying said recorded signal;
means for separating said second signal from said television program signal; and
means for deriving, from said second signal, visible text descriptive of the television program currently being replayed.
22. A video recorder comprising an appliance controller according to claim 14 and further comprising:
means for combining said second signal with a television program signal;
means for recording said combined signal on a video recording medium;
means for replaying said recorded signal;
means for separating said second signal from said television program signal; and
means for deriving, from said second signal, visible text descriptive of the television program currently being replayed.
-

- 19 -

comparing said classification signal to said set of prohibited classifications, and, if said classification signal indicates that a received program is a member of the set of prohibited classifications;

5

causing a video appliance to be temporarily deactivated until said classification signal indicates that a received program is no longer a member of the set of prohibited classifications.

10

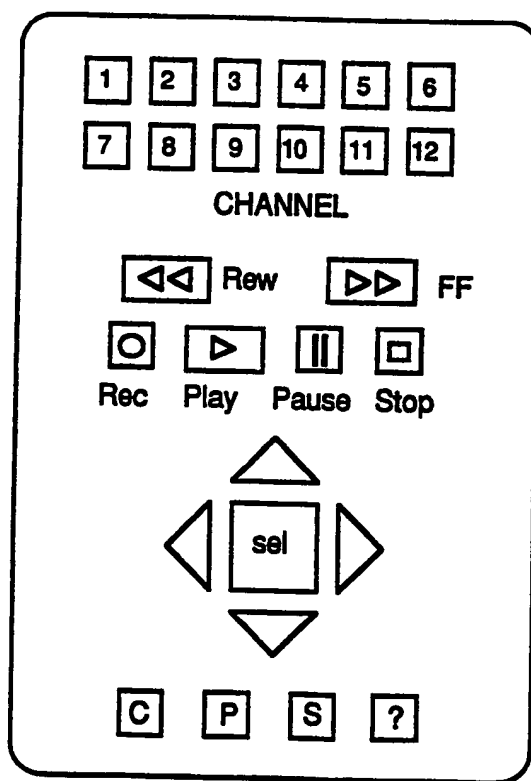


Fig 2

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) 6

According to International Patent Classification (IPC) or to both National Classification and IPC

Int. Cl.⁵ H04N 7/173; G11B 27/02, 27/10, 27/36**II. FIELDS SEARCHED**

Minimum Documentation Searched 7

Classification System |

Classification Symbols

IPC

H04N 7/16, 7/173; G11B 27/02, 27/10, 27/36

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched 8

AU: IPC as above; Australian Classification 05.42

III. DOCUMENTS CONSIDERED TO BE RELEVANT 9

Category*	Citation of Document, ¹¹ with indication ¹² where appropriate, of the relevant passages	Relevant to Claim No 13
X,P	WO,A, 90/00847 (INSIGHT TELECAST INC) 25 January 1990 (25.01.90) See pages 3-18, Figures 1, 2	1, 2, 10-13, 19, 20
Y	WO,A, 88/04507 (BRITISH BROADCASTING CORPORATION) 16 June 1988 (16.06.88) See pages 1-10, Figures 1-3	1, 2, 10-13, 19, 20
Y	AU,A, 76254/87 (SANYO ELECTRIC CO, LTD) 4 February 1988 (04.02.88) See pages 6-9, Figures 1-3	1, 2, 10-13, 19, 20
Y	US,A, 4305101 (YARBOUGH et al) 8 December 1981 (08.12.81) See column 1 line 41 to column 5 line 10, Figures 1, 2, 5	1, 2, 4, 6, 8, 10-13, 15, 17, 19-21, 24
Y	US,A, 4390901 (KEISER) 28 June 1983 (28.06.83) See column 3 line 13 to column 5 line 5, Figures 1, 2	1, 2, 10-13, 19, 20
Y	US,A, 4605964 (CHARD) 12 August 1986 (12.08.86) See column 5 line 46 to column 7 line 65, Figure 3	1, 2, 4, 10-13, 15, 19, 20, 24
Y	US,A, 4635121 (HOFFMAN et al) 6 January 1987 (06.01.87) See column 2 lines 24-48, Figure 1	1, 12, 23

(continued....)

* Special categories of cited documents: 10

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "Z" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search 23 August 1990 (23.08.90)	Date of Mailing of this International Search Report 29 August 1990
International Searching Authority Australian Patent Office	Signature of Authorized Officer R TOLHURST

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON
INTERNATIONAL APPLICATION NO. PCT/AU 90/00226

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Members			
WO 90/00847	AU 40420/89				
WO 88/04507	EP 296190	GB 2200519	JP 1502153		
AU 76254/87 AU 594179	EP 255107	JP 63050277	US 4879611		
US 4305101	CA 1159551 GB 2046967	DE 3014309 JP 55141876	FR 2454736		
US 4390901	DE 2950432				
US 4605964	AU 11045/83 WO 8302208	EP 96705	JP 58502179		
US 4635121	AT 26028 EP 112589	AU 21629/83 JP 59108433	DE 3370383		
US 4787063	EP 179001	FR 2572235	FR 2579397		
US 4864429	AU 62876/86 DK 1768/87 HU 46173 WO 8701001	DD 248915 EP 270537 JP 62110379	DE 3528467 FI 880544 NO 871443		

END OF ANNEX